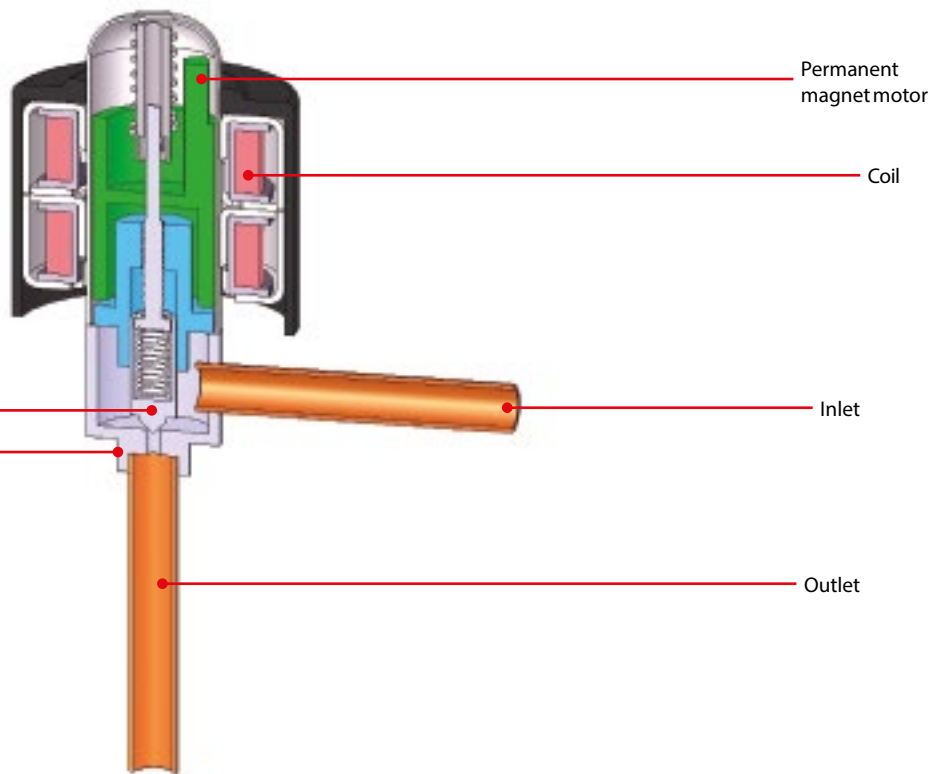


ETS 6, Electric expansion valve

ETS 6 are compact and lightweight electric expansion valves. Bi-flow operation is possible for heat pump systems. The valve operation is by means of a unipolar motor, which can be controlled by a number of controllers from Danfoss or third party vendors.

With a Danfoss EKE 1A, EKE 1B, EKE 1C and EIM 336 (current drivers) and an AKS sensor, an accuracy better than ± 0.5 K can be obtained.



Cross section diagram of ETS 6 series
 *Refers to refrigerant flow in cooling mode

Facts

Applications:

- Heat pumps
 - Modular air-cooled chillers
 - VRF
 - Multi split
 - Inverter mini split
 - Bus air conditioning
 - IT cooling
 - Applicable to R410A, R407C, R404A, R507, R134a, R22, R448A, R449A, R452A
- For a fully updated list of approved refrigerants, visit www.products.danfoss.com and search for individual code numbers, where refrigerants are listed as part of product specifications.

- Precision flow control
- Proven know-how and high reliability
- Power saving design that enables energy efficiency
- Compact and lightweight hermetic design with removable coil
- Bi-flow operation for reversible systems
- Controller: Danfoss supplies electronic controller EKE 1 Series, temperature sensors and transmitters

Technical data and ordering

ETS 6

Technical data

Maximum working pressure	47 bar / 681 psig
Refrigerant oil	All mineral oils and ester oils (to lubricate ETS 6 valve)
Ambient temperature	-30 – 70 °C / -22 – 158 °F
Fluid temperature	-30 – 70 °C / -22 – 158 °F
Durability	- Tested for 60 Million total pulses supplied to the valve during partially open valve, which is comparable to 150.000 cycles if the valve is operated between 100 to 300 pulses open - Tested for 30.000 full stroke cycles including 20 pulse overdrive at each closure
Ambient humidity	95% RH or less
Modulation	Permanent magnet type direct operating stepper motor
Excitation method	1 – 2 phase
Electrical connection	JST XHP-6 and JST XHP-5
Excitation speed	min 30 pps (pulses per second) to max. 90 pps, recommended 31.3 pps
Operating range	0 – 480 pulses, no holding power required (NOTE: do not apply more than 520 pulses)
Full motion transit time	e.g. 16 second at 30 pps, 6 second at 80 pps
Installation position	With coil on the upper side and the valve / coil assembly within $\pm 15^\circ$ of the vertical axis.
Liquid line solenoid valve	If a liquid line solenoid valve is used, it must be installed in such a way that it does not create liquid hammering in the ETS 6 valve.
Max. coil winding temperature	115 °C / 239 °F
Approvals	EAC, LLC CDC EURO TYSK, CE, UL, RoHS, CQC



ETS 6 - Valve excl. coil

Valve ordering

Type	Orifice no.	Nominal Capacity [kW]					Connection (solder)		Valve tube configuration	MWP [bar]	MOPD [bar]	Max. Reverse Pressure ¹⁾ [bar]	Flow direction charact.	Code no.
		R22	R134a	R404A / R507	R407C	R410A	A [mm]	B [mm]						
ETS 6 – 08	08	1.5	1.2	1.1	1.6	1.8	6.35	7.94	90°	47	35	20	Bi-flow	034G5095
ETS 6 – 10	10	2.6	2	1.8	2.7	3.1	7.94	7.94	90°	47	35	35	Bi-flow	034G5005
ETS 6 – 14	14	5.8	4.5	4.1	5.9	6.8	7.94	7.94	90°	47	35	20	Bi-flow	034G5015
ETS 6 – 18	18	10.3	8.1	7.3	10.6	12.1	6.35	6.35	90°	47	35	28	Bi-flow	034G5026
ETS 6 – 25	25	19.6	15.3	13.8	20.1	23	7.94	7.94	90°	47	35	22	Bi-flow	034G5035
ETS 6 – 32	32	28.8	22.5	20.3	29.6	33.9	7.94	7.94	90°	47	28	12 ²⁾	Bi-flow	034G5055
ETS 6 – 40	40	39.1	30.6	27.6	40.2	46	7.94	7.94	90°	47	21	7	Bi-flow	034G5065

The Rated capacity is based on:

Evaporating temperature t_e : 5 °C, Condensing temperature t_c : 38 °C, Subcooling t_{sub} : 0 K, Superheat SH: 0 K

¹⁾ Max. Reverse Pressure = Pressure at which the valve can still close tightly in reverse direction.

²⁾ Please contact Danfoss if higher maximum reverse pressure valve is required.

ETS 6 - Valve excl. coil

Valve ordering

Type	Orifice no.	Nominal Capacity [TR]					Connection (solder)		Valve tube configuration	MWP [psig]	MOPD [psig]	Max. Reverse Pressure ¹⁾ [psig]	Flow direction charact.	Code no.
		R22	R134a	R404A / R507	R407C	R410A	A [in]	B [in]						
ETS 6 – 08	08	0.426	0.341	0.312	0.454	0.511	¼	¼	90°	681	507	290	Bi-flow	034G5095
ETS 6 – 10	10	0.74	0.57	0.51	0.77	0.88	⅝	⅝	90°	681	507	507	Bi-flow	034G5005
ETS 6 – 14	14	1.65	1.28	1.16	1.68	1.93	⅝	⅝	90°	681	507	290	Bi-flow	034G5015
ETS 6 – 18	18	2.93	2.30	2.07	3.01	3.44	¾	¾	90°	681	507	406	Bi-flow	034G5026
ETS 6 – 25	25	5.57	4.35	3.92	5.72	6.54	⅝	⅝	90°	681	507	319	Bi-flow	034G5035
ETS 6 – 32	32	8.19	6.40	5.77	8.42	9.64	⅝	⅝	90°	681	406	174	Bi-flow	034G5055
ETS 6 – 40	40	11.12	8.70	7.85	11.43	13.08	⅝	⅝	90°	681	305	101	Bi-flow	034G5065

The Rated capacity is based on:

Evaporating temperature t_e : 41 °F, Condensing temperature t_c : 100 °F, Subcooling t_{sub} : 32 °F, Superheat SH: 32 °F

¹⁾ Max. Reverse Pressure = Pressure at which the valve can still close tightly in reverse direction.

Please contact Danfoss if higher maximum reverse pressure valve is required.

Technical data and ordering

Coil for ETS 6



Ordering

Model No.	Voltage (current)	Enclosure	Insulation	Cable length [m]	Connector	Code no.
			class			
Coil ordering for ETS 6, Single pack						
ETS 6 Coil	12 V DC (0.26A / phase)	IP66	Class "E" (UL Class 105 (A))	0.7	JST XHP-6	034G5105
				0.7	JST XHP-5	034G5115
				1.5	JST XHP-5	034G5145
				2.0	JST XHP 5 1	034G5185
				3.0	JST XHP-5	034G5135
				0.6	AMP UPC- 6	034G5175

Related products

Electronic control

Type EKE 1A, EKE 1B, EKE 1C and EIM 336 (current drivers)

Temperature sensors and pressure transmitters

Type AKS